

ABSTRACT

Background :

Horizontal condylar inclination has significant role to play in fabricating a prosthesis that is in harmony with neuromuscular system. Over the period, researchers have come up with numerous methods to measure horizontal condylar inclination of the subject. Diagnostic x rays such as orthopantomogram and lateral cephalogram has been used previously in various studies. The present study is conducted to evaluate horizontal condylar inclination using cone beam computed tomography and compare its values against clinical and panoramic radiograph method.

Aims and objectives :

To assess the reliability of CBCT over clinical and panoramic radiographic technique. To find a correlation between clinical and radiographic techniques. To assess the reliability between radiographic techniques.

Materials and method:

Horizontal condylar inclination of twenty five healthy dentulous subjects (16 male & 9 female) between 18-30 years of age have been measured using the following three methods. Group 1 : clinical method, Group 2 : OPG method, Group 3: CBCT method. In Clinical method, HCI was measured using Hanua Wide-View articulator with the help of protrusive interocclusal record. Radiographic measurements of HCI were done by means of software analysis of digital images obtained from OPG (SIRONA, SIDEXISXG). HCI measurements were done on the 0.150 mm thick cross-sectional slice of the CBCT image (NEWTOM, NNT viewer) sectioned carefully on the midsagittal plane of the condyle. Both right and left side HCI values were measured in each subject. Measurements were tabulated and statistically analysed.

Results :

Mean value of HCI on the left and right side of the subject following three methods were calculated separately. Mean value of left HCI measured on 25 subjects following Clinical method, OPG method, CBCT method were 29.800, 35.960, 31.132 respectively. Mean value of right HCI measured on 25 subjects following clinical, OPG and CBCT method were 29.800, 35.856, 30.968 respectively. Statistical significant difference existed between groups($P < 0.01$), as revealed by ONE-WAY ANOVA. Post hoc intergroup comparison test showed no significant difference between clinical and CBCT method, whereas showed significant difference between clinical and OPG method. Significant correlation was found between clinical and radiographic techniques. Pearson correlation test tested the correlation significance.

Conclusion :

Within the limitations of the study, no statistical significant difference seen between clinical and CBCT method. Whereas, significant difference existed between clinical and OPG method. CBCT method is as reliable as clinical method and can be useful tool in measuring horizontal condylar inclination.